

REMARKS

Claims 1-22 are pending. Claims 1 and 9 are independent and amended. Claims 16-22 are new.

Applicants respectfully submit that it would be improper for the Examiner to issue a first action final rejection at least because as indicated in the Advisory Action dated May 28, 2002, the entry of the new claims 16-22 was refused.

In the final Office Action dated November 6, 2001, claims 1-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Document 1: Impact Engineering, Nikkan Kogyo Newspaper Ltd., October 28, 1988, pps. 173-183 in view of Document 2: Lecture Thesis of 16th Series of Chugoku Branch of Japan Design Engineering Society Ass'n, June 20, 1988, pps. 25-29. Applicants respectfully traverse this rejection.

Document 1 pertains to a striker bar type Hopkinson bar method including a striker bar, an input bar, a specimen and an output bar, and gauges on the input and output bars. As shown in Fig. 7.1, gauge G_B is positioned on the input bar and gauge G_C is position on the output bar. However, the input and output bars disclosed by Document 1 are made of steel and the number of gauges disclosed is limited to only three.

Document 2 pertains to an impact compression testing apparatus designed specifically for testing viscoelastic materials including an input bar, strain gauges, a striker bar, and an output bar. Unlike the apparatus in Document 1,

the input and the output bars of document 2 are made of PMMA, which is a viscoelastic material.

Document 1 and Document 2, either alone or in combination, do not teach all the features of independent claims 1 and 9. In particular, neither reference discloses anything with respect to setting the length of the input bar so that "a reflected strain wave is damped and a re-reflected strain wave is not generated," as recited by claim 9 and similarly claim 1.

Accordingly, claims 1 and 9 are allowable over the prior art. Regarding dependent claims 2-8 and 10-15, these claims are allowable for at least the same reasons as their corresponding independent claims.

New Claims

Newly added claims 16-22 are supported in the specification. For example, claim 16 is supported by at least Figure 1. Claims 17-22 are supported on at least page 42, lines 7 – end.

Claims 16-22 are allowable for at least the same reasons as their corresponding independent claims.

CONCLUSION

Entry of the above amendments is earnestly solicited. An early and favorable first action on the merits is earnestly solicited.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to contact


Jayne Saydah (Reg. No. 48,796) at (703) 205-8000, in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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By



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Attachment: Version With Markings Showing Changes Made

VERSION WITH MARKINGS SHOWING CHANGES MADE

The claims have been amended as follows:

1. (Amended) A viscoelastic characteristic value-measuring apparatus comprising:

an input bar and an output bar arranged in a straight line to hold a specimen made of a viscoelastic material therebetween;

first and second strain gauges installed on said input bar to measure an incident strain wave generated when a front end of said input bar is hit and a reflected strain wave; and

third and fourth strain gauges installed on said output bar to measure a transmitted strain wave transmitted from said input bar to said output bar through said specimen,

wherein said input bar and said output bar are made of a viscoelastic material;

[a length of said output bar is set to a range of 500 mm to 2500mm both inclusive;] and

a length of said input bar is set **so that the reflected strain wave is damped and a re-reflected strain wave is not generated** [to a range from 1500mm to 2500mm both inclusive].

9. (Twice Amended) A method of measuring a viscoelastic characteristic value, comprising the steps of:

providing a measuring apparatus having an input bar and output bar;

setting a length of said input bar such that a reflected strain wave generated in the input bar when the input bar is hit is damped and a re-reflected strain wave is not generated;

hitting a front end of [an] **said** input bar **[having a length in the range of 1500mm to 2500mm]**, with a specimen held between a rear end of said input bar and a front end of an output bar **[having a length in the range of 500mm to 2500mm]** to generate a strain wave including an incident strain wave, [a] **the** reflected strain wave, and a transmitted strain wave propagating in said input bar, said specimen, and said output bar;

measuring said incident strain wave and said reflected strain wave with first and second strain gauges installed on said input bar, and measuring a transmitted strain wave with third and fourth strain gauges installed on said output bar;

estimating a history of said incident strain wave at the rear end of said input bar, a history of said reflected strain wave at the rear end of said input bar, and a history of said transmitted strain wave at the front end of said output bar by using a history of said each strain wave;

computing a strain speed history of a specimen, a strain history thereof, and a stress history thereof from said estimated history of said incident strain

· wave, said history of said reflected strain wave, and said history of said transmitted strain wave and determining a stress-strain curve of said specimen; and

computing a viscoelastic characteristic value including Young's modulus or a loss factor, from said stress-strain curve.

Claims 16-22 are new.